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EXAMINER

WONG, LESLIE

ART UNIT	PAPER NUMBER
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2177

DATE MAILED: 02/17/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/865,032

Applicant(s)

AZZAM, SALIHA

Examiner

Leslie Wong

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 18, 20-23 and 25 is/are rejected.
- 7) ☒ Claim(s) 17, 19, 24 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Receipt of Applicant's Amendment, filed 12 December 2003, is acknowledged.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title; if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Braden-Harder et al.** (U.S. Patent 5,933,822) and in view of **Coden et al.** (U.S. Patent 6,263,328 B1).

Regarding claim 1, **Braden-Harder et al.** teaches a method for retrieving information from a document collection, the method comprising:

- a). converting a user query into at least two logical form triples (Figs. 5A and 5B);
- c). searching an index of the document collection for documents, that match the compound logical form query (col. 7, lines 35-43 and col. 8, lines 10-14).
- b). **Braden-Harder et al.** does not explicitly teach a step of generating a compound logical form query by connecting at least two of the logical form triples with a restrictive operator (i.e., AND or NEAR).

Coden, however, teaches translating user input query into compound query objects for information retrieval, compound query objects are used to express complex query, and a Boolean compound query is used to express the complete user queries which is composed of sub-queries of different type (col. 4, lines 49-59). **Coden** uses the Boolean connector AND to express the fact that the user wants to find two particular Hitchcock movies: "Psycho AND the Birds".

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of the cited references because **Coden's** teaching involves translate user query into a compound query objects which express Boolean combinations of typed elementary query objects would have allowed **Braden-Harder's** to draw combinations and relations between the concepts to be searched as indicated at col. 17, lines 22-26.

Regarding claim 2, **Braden-Harder et al.** further teaches wherein searching an index comprises searching a field in the index that contains entire logical form triples (col. 18, lines 36-41 and col. 12, lines 16-22).

Regarding claim 3, **Braden-Harder et al.** further teaches wherein converting a user query comprises identifying a query type from the user query and generating a logical form triple based on the query type (col. 12, line 65 – col. 13, line 65).

Regarding claim 4, **Braden-Harder et al.** further teaches wherein generating a

compound logical form query comprises:

- a). determining a score for each logical form triple (col. 17, lines 47-54 and Fig. 8A);
- b). combining the scores for each logical form triple to form a total score (col. 17, lines 44-46; col. 18, lines 10-12); and
- c). generating the compound logical form query based in part on the total score (col. 18, lines 55-58).

Regarding claim 5, **Braden-Harder et al.** further teaches wherein determining a Score for each logical form triple comprises determining a score based on properties of words associated with a logical form triple (col. 17, lines 47-54 and Fig. 8A).

Regarding claim 6, **Braden-Harder et al.** further teaches wherein determining a score for a logical form triple comprises determining a score based on a linguistic type associated with the logical form triple (col. 17, lines 47-54).

4. Claims 7-9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Braden-Harder et al.** (U.S. Patent 5,933,822) and in view of **Coden et al.** (U.S. Patent 6,263,328 B1) as applied to claims 1-6 above and further in view of **Kanoh et al.** (U.S. Patent 5,873,077).

Regarding claim 7, **Braden-Harder et al.** and **Coden et al.** do not explicitly teach wherein generating the compound logical form query based in part on the total score comprises:

- a). determining that the total score is relatively low; and
- b). based on the relatively low total score, using restrictive operators between each logical form triple in the compound logical form query.

Kanoh et al., however, teaches query refinement by modifying the keywords of the query and changing the non-restrictive operator (i.e. OR) to a restrictive operator (i.e. AND) (col. 9, lines 46-50).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to adjust the query based on the ranking of the documents of search results because doing so would help limiting the search in order to provide a narrower search results.

Regarding claim 8, **Braden-Harder et al.** and **Coden et al.** do not explicitly teach wherein generating the compound logical form query based in part on the total score comprises:

- a). determining that the total score is relatively high; and
- b). based on the relatively high total score, constructing the compound logical form query so that it is not overly restrictive.

Kanoh et al., however, teaches modifying a search query to expand the search criteria (col. 9, lines 38-45).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to adjust the query based on the ranking of the documents of search results in order to expand the search to produce desired results.

Regarding claim 9, **Braden-Harder et al.** further teaches wherein constructing the compound logical form query so that it is not overly restrictive comprises constructing the compound logical form query to allow fuzzy matching (i.e., query terms matched with index terms for a document receives a assigned score for the term) of at least one logical form triple (col. 17, lines 44-46).

Regarding claim 11, **Braden-Harder et al.** further teaches wherein constructing the compound logical form query so that it is not overly restrictive comprises constructing the compound logical form query using only some of the logical form triples formed from the user query (col. 14, lines 21-26).

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Braden-Harder et al.** (U.S. Patent 5,933,822) in view of **Coden et al.** (U.S. Patent 6,263,328 B1) and **Kanoh et al.** (U.S. Patent 5,873,077) as applied to claims 7-9, and 11 above, and further in view of **Messerly et al.** (U.S. Patent 6,076,051).

Regarding claim 10, **Braden-Harder et al.**, **Coden et al.**, and **Kanoh et al.** do not clearly teach wherein constructing the compound logical form query so that it is not

overly restrictive comprises placing a non-restrictive operator between at least two logical form triples in the compound logical form query.

Messerly et al., however, teaches wherein constructing the compound logical form query so that it is not overly restrictive comprises placing a non-restrictive operator between at least two logical form triples in the compound logical form query (col. 9, line 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to construct the logical form triple query by connecting a set of logical form triples with non-restrictive operators in order to expand the primary logical form to produce desired results.

6. Claims 12, 13, 15, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Braden-Harder et al.** (U.S. Patent 5,933,822) in view of **Coden et al.** (U.S. Patent 6,263,328 B1) as applied to claims 1-6 above, and in view of **Hoppe et al.** (U.S. Patent 5,515,488).

Regarding claim 12, **Braden-Harder et al.** further teaches wherein searching the index produces a set of logical-based search results and wherein the method of retrieving information further comprises:

a). searching a word index of the document collection for documents that match words in the user query to produce a set of word-based search results (col. 7 lines 27-43); and

b). **Braden-Harder et al. and Coden et al.** do not explicitly teach a step of intersecting the logical-based search results with the word-based search results to form a filtered set of search results.

Hoppe et al., however, teaches using Venn diagram to display intersection of the search results (Figs. 8 and 9; col. 10, lines 43-45; lines 56-61; col. 11, lines 1-3).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to intersect the word-based and logical-based search results as this would produce the most relevant documents and improve the effectiveness of the scoring algorithm.

Regarding claims 13 and 20, **Braden-Harder et al.** teaches a method of retrieving information from a document collection, the method comprising:

- b). applying the compound logical form query to a logical form triple index of a document collection to form a set of logic-based search results (col. 16, lines 1-5);
- c). generating a word query based on words in the user query (col. 12, lines 30-45);
- d). applying the word query to a word index of the document collection to form a set of word-based search results (col. 18, lines 35-41).

a). **Braden-Harder et al.** does not explicitly teach a step of generating a compound logical form query from a user query, the compound logical form query having at least two logical form triples **connected by a restrictive operator**.

Coden et al., however, teaches processing compound query object for information retrieval, compound query objects are used to express complex query, and a Boolean compound query is used to express the complete user queries which is composed of subqueries of different type (col. 4, lines 49-59). **Coden et al.** uses the Boolean connector AND to express the fact that the user wants to find two particular Hichcock movies: "Psycho and the Birds".

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of the cited references because **Coden's** teaching involves translate user query into a compound query objects which express Boolean combinations of typed elementary query objects would have allowed **Braden-Harder's** to draw combinations and relations between the concepts to be searched as indicated at col. 17, lines 22-26.

e). **Braden-Harder et al.** and **Coden et al.** do not explicitly teach a step of intersecting the logic-based search results with the word-based search results to form a set of filtered compound results.

Hoppe et al., however, teaches using Venn diagram to display intersection of the search results (Figs. 8 and 9; col. 10, lines 43-45; lines 56-61; col. 11, lines 1-3).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to intersect the search results as this would produce the most relevant documents and improve the effectiveness of the scoring algorithm.

Regarding claims 15 and 21, **Braden-Harder et al.** further teaches wherein generating a word query comprises identifying important words in the user query and placing the important words in the word query (col. 12, lines 30-45).

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Braden-Harder et al.** (U.S. Patent 5,933,822) in view of **Coden et al.** (U.S. Patent 6,263,328 B1) and **Hoppe et al.** (U.S. Patent 5,515,488) as applied to claims 12, 13, 15, 20-21, and 25 above and in view of **Kanoh et al.** (U.S. Patent 5,873,077).

Regarding claim 14, **Braden-Harder et al.** teaches combining logical form triples query with restrictive operator (i.e., AND) (Figs. 5A and 5B)

Braden-Harder et al., **Coden et al.**, and **Hoppe et al.**, do not clearly teaches the steps of:

- a). determining the restrictiveness of a set of logical form triples identified from the user query; and
- b). combining logical form triples so as to limit the restrictiveness of the compound logical form query formed from the set of logical form triples.

Kanoh et al., however, teaches modifying a search query to expand the search criteria (col. 9, lines 38-45).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the primary logical form query to include non-restrictive operators in order to expand the logical-based query to produce desired search results.

8. Claims 16, 18, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Braden-Harder et al.** (U.S. Patent 5,933,822) in view of **Coden et al.** (U.S. Patent 6,263,328 B1) and **Hoppe et al.** (U.S. Patent 5,515,488) as applied to claims 13, 15, 20-22, and 25, and further in view of **Messerly et al.** (U.S. Patent 6,076,051).

Regarding claim 16, **Braden-Harder et al.** further teaches the steps of:

b). applying the standard logical form triple query to the logical form triple index of the document collection to form a second set of logic-based search results (col. 16, lines 1-5);

c). intersecting the word-based search results with the second set of logic-based search results to form a set of filtered standard results (col. 17, lines 13-59).

a). **Braden-Harder et al., Coden et al., and Hoppe et al.** do not clearly teach a step of generating a standard logical form triple query by connecting a set of logical form triples with non-restrictive operators.

Messerly et al., however, teaches wherein constructing the compound logical form query so that it is not overly restrictive comprises placing a non-restrictive operator between at least two logical form triples in the compound logical form query (col. 9, line 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to construct the logical form triple query by connecting a set of

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logical form triples with non-restrictive operators in order to expand the primary logical form query to produce desired search results.

Regarding claim 18, **Braden-Harder et al.** further teaches the steps of:

- a). generating a second word query based on words in the user query (col. 12, lines 30-34);
- b). applying the second word query to the word index to form a second set of wordbased search results (col. 18, lines 35-41).
- c). **Braden-Harder et al. and Coden et al.** do not explicitly teach intersecting the second set of word-based search results with the filtered standard results to form further filtered standard results.

Hoppe et al., however, teaches using Venn diagram to display intersection of the search results (Figs. 8 and 9; col. 10, lines 43-45; lines 56-61; col. 11, lines 1-3).

Regarding claim 23, **Braden-Harder et al., Coden et al., and Hoppe et al.** do not explicitly teach the steps of:

- a). performing a standard logic-based search of the document collection by identifying at least two logical form triples from the user query, connecting each of the identified logical form triples together using non-restrictive operators to form a standard logical form triple query, and searching the document collection using the standard logical form triple query to form standard logic-based search results; and

Messerly et al., however, teaches wherein constructing the compound logical form query so that it is not overly restrictive comprises placing a non-restrictive operator between at least two logical form triples in the compound logical form query (col. 9, line 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to construct the logical form triple query by connecting a set of logical form triples with non-restrictive operators in order to expand the primary logical form to produce desired results.

b). **Braden-Harder et al.** and **Messerly et al.**, do not explicitly teach intersecting the standard logic-based search results with the word-based search results to form filtered standard search results.

Hoppe et al., however, teaches using Venn diagram to display intersection of the search results (Figs. 8 and 9; col. 10, lines 43-45; lines 56-61; col. 11, lines 1-3).

Regarding claim 25, **Braden-Harder et al.** further teaches the steps of:

a). generating a second word query based on words in the user query (col. 12, lines 30-34);

b). applying the second word query to the word index to form a second set of wordbased search results (col. 18, lines 35-41).

c). **Braden-Harder et al.** and **Coden et al.** do not explicitly teach intersecting the second set of word-based search results with the filtered standard results to form further filtered standard results.

Hoppe et al., however, teaches using Venn diagram to display intersection of the search results (Figs. 8 and 9; col. 10, lines 43-45; lines 56-61; col. 11, lines 1-3).

Allowable Subject Matter

9. Claims 17, 19, 24, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Prior art of record fails to teach a combination of elements including returning the filtered compound results and the filtered standard results to the user with the filtered compound results ranked higher than the filtered standard results as recited in dependent claim 17.

Prior art of record fails to teach a combination of elements including returning the filtered compound results, the further filtered standard results and the filtered standard

results to the user with the filtered compound results ranked above the further filtered standard results and the further filtered standard results ranked above the filtered standard results as recited in dependent claims 19.

Prior art of record fails to teach a combination of elements including wherein the information retrieval steps further comprise returning the filtered search results and the filtered standard search results to the user with the filtered search results ranked higher than the filtered standard search results as recited in dependent claim 24.

Prior art of record fails to teach a combination of elements including wherein the information retrieval steps further comprise returning the filtered search results, the filtered standard search results, and the further filtered standard search results to the user with the filtered search results ranked higher than the further filtered standard search results and the further filtered standard search results ranked higher than the filtered standard search results as recited in dependent claim 26.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lin et al. (U.S. Patent 6,675,159 B1)

Katz et al. (U.S. Patent 5,309,359 A)

Dahlgren et al. (U.S. Patent 5,794,050)

Brassell et al. (U.S. Patent 6,553,372 B1)

Maxwell, III et al. (U.S. Patent 5,438,511)

Response to Argument

11. Applicants' arguments filed 12 December 2003 regarding independent claims 1, 13, and 20 have been fully considered.

Applicants argue that none of the cited references, either alone or in combination, show or suggest forming a compound logical form query by connecting at least two logical form triples with a restrictive operator in paper number 4A, page 9, lines 12-20 of Applicants' response.

In response to the preceding arguments, Examiner respectfully submits that because Applicants' arguments are persuasive, the Examiner hereby introduces a new ground of rejection: changing from previously a 102 rejection to a 103 rejection by adding **Coden et al.** to address the limitation: "generating a compound logical form query by **connecting at least two** of the logical form triples with a **restrictive operator**". **Coden et al.** teaches information retrieval utilizing various types of objects: Typed Elementary Query Objects, Typed Compound Query Objects, Boolean Compound Query Object, and Compound Parametric Query Object. A Boolean Compound Query Object is used to express the complete user query which is composed of subqueries of different type using a restrictive operator AND (col. 4, lines

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50-56). **Coden et al.** further teaches deriving the Compound Parametric Query Object from a Based Query Object would draw combinations and relations between the triplets (col. 15, lines 50-55). **Braden-Harder et al.** teaches information retrieval and ranking of documents containing logical form triples. The applied references teaches related subject matter and they are in the same field of endeavor, Examiner believes combining **Braden-Harder et al.** and **Coden et al.** would arrive at the above cited limitation.

Applicants further argue that it is not clear that a restrictive operator could be used in the **Braden-Harder** method without destroying the scoring system used to rank results in **Braden-Harder** as using a restrictive operator would cause a document to be pruned that would have received a high score in the **Braden-Harder** ranking system in paper number 4A, page 10, last paragraph.

In response to the preceding arguments, Examiner respectfully submits that combining **Braden-Harder et al.** and **Coden et al.** to enable the system to join the logical forms with a restrictive operator facilitates retrieving the results more accurately based on the concept that user entered than just using a single logical form, since using the restrictive operator would tighten the constraint of the query. As Applicants pointed out, **Braden-Harder et al.** discloses that it searches for any match between any logical form in the query set. The prior art does not require that multiple logical form triples have to be found within a document. Thus, it does not mean that the use of multiple

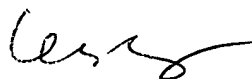
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logical form triples with a restrictive connector it prohibited. Therefore, Examiner submits that the combination of **Braden-Harder et al.** and **Coden et al.** is proper.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leslie Wong whose telephone number is (703) 305-3018. The examiner can normally be reached on Monday to Friday 9:30am - 6:30 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Breene can be reached on (703) 305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Leslie Wong
Patent Examiner
Art Unit 2177

Lw
February 11, 2004



SRI RAMA CHANNAVAJALA
PRIMARY EXAMINER